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Jack Rabbit to Big Sky Meadow Village 161 kV Transmission Line Upgrade

Bozeman Ranger District, Gallatin National Forest
Gallatin County, Montana

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Final
Environmental Impact Statement
Gallatin County, Montana

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Abstract: This Final Environmental Impact Statement (FEIS) considers potential effects of a project proposed by NorthWestern Energy to rebuild an existing 69 kilovolt (kV) electric transmission line to a 161 kV electric transmission line. The upgraded 161 kV transmission line would connect the existing Jack Rabbit Substation located near Four Corners, west of Bozeman, Montana, to a new substation near Big Sky Meadow Village in Big Sky, Montana. The US Forest Service developed three action alternatives, and the No Action (Alternative 1) in response to issues raised by the public and agency specialists. The three action alternatives include: Alternative 2 – Proposed Action; Alternative 3 – Agency Preferred Alternative (Cascade East); and Alternative 4 (Cascade West). The Preferred Alternative most effectively meets the purpose and need and while minimizing impacts to the natural and human environment, particularly recreational residences and the Gallatin River.

The FEIS was revised to include additional analysis and factual corrections in response to public comments received on the Draft Environmental Impact Statement (DEIS) (October 2012). The FEIS also includes Appendix G- Response to Comments. The Appendix summarizes comments received and our responses. If the response warranted a revision, supplement or factual correction in the FEIS it was noted in the response. This FEIS can be accessed on the Internet at http://www.fs.usda.gov/gallatin under Land & Resource Management then under “Projects”.

The FEIS (March 2013) contains the supporting analysis for the Record of Decision (ROD) and the ROD will be circulated concurrently with the FEIS. A notice of availability of the FEIS will be published in the Federal Register in March 2013. A legal notice announcing the availability of the ROD will be published in the Bozeman Daily Chronicle, initiating a 45 day administrative appeal period.

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CHANGES BETWEEN THE DRAFT AND FINAL ENVIRONMENTAL IMPACT STATEMENT

Various changes were made to the Jack Rabbit to Big Sky Meadow Village Project (JRBS or Proposed Project) Draft Environmental Impact Statement (DEIS) to develop this Final Environmental Impact Statement (FEIS). These changes were made to provide updates to the document to reflect current Proposed Project status and in response to comments received during the public and agency review of the DEIS as described in Appendix G, Response to Comments on the DEIS.

This section documents changes made to the DEIS for the development of this FEIS. The Introduction, Chapters 1 through 4, and the Index and Reference sections of the FEIS do not display in-line documentation of the additions, deletions, or modifications of text, figures, or tables made to the DEIS. Substantive changes to text, figures, or tables are documented within this section. This section has been added to this FEIS as a way for the reader to understand the changes between the DEIS and FEIS.

Modifications to the DEIS

Throughout this document, references to the DEIS were updated to read FEIS, as appropriate, and other minor editorial edits or corrections were made. Substantive modifications made to the DEIS in the development of this FEIS are described below.

Introduction – Table of Contents

A statement was added to the summary to clarify that the entire Project is 37 miles long and that 16 of those miles are located on National Forest System (NFS) lands.

Chapter 1 – Introduction

A new figure, Figure 1, was added to this chapter depicting the entire 37 mile Proposed Project on NFS lands as well as private lands.

Wolverine was moved from the Forest Sensitive Species Issue Section to the Threatened, Endangered, and Proposed Threatened Species Issue Section.

Chapter 2 – Alternatives, Including Proposed Action

A statement was added to the Introduction section to reflect that the 21 miles of Proposed Project on private lands (Phase 1) are considered under the context of cumulative effects and connected actions in the FEIS.

A statement was added to the Alternative 2 - Proposed Action section clarifying that if steel transmission structures are used they would be weatherized (Cor-Ten) steel.

Wolverine was moved from the Forest Sensitive Species to the Threatened, Endangered, and Proposed Threatened Species in the Alternative Comparison table (Table 2-1).

Chapter 3 – Affected Environment and Environmental Consequences

Two new sections were added to this Chapter; Air Quality and Environmental Justice.

New information was added to the Human Health and Safety section to better address potential health risks associated with electric and magnetic fields (EMF).

Where applicable, additional information concerning cumulative effects of the project on private lands was added to the analysis.

The recommended timing restriction related to the goshawk was changed to the following recommendation: "If an active goshawk nest is detected in the vicinity of the Proposed Project prior to or during construction, timing restrictions would be imposed (no ground disturbing activities within a 420-acre buffer of the nest (post-fledging area) during the period of April 15 through August 15 (USFS 2006). Known occupied nest trees shall not be cut during construction."

The status of wolverine was changed from a Forest Sensitive Species to a proposed Threatened and Endangered Species consistent with the February 4, 2013 proposed rule from the US Fish and Wildlife Service (USFWS) to list the wolverine in the contiguous US as a threatened species under the Endangered Species Act (ESA) (78 Code of Federal Regulations [CFR] 7864).

Chapter 4 – Consultation and Coordination

No substantive changes. Information of DEIS and post-DEIS consultation and coordination was updated and included.

References

Several references were added to this section based on updated information.

Index

No substantive changes.

Appendices

The following appendix has not been updated but is included with this FEIS:

Appendix A: Underground Alternative

The following appendix is a new appendix that was not previously included in the DEIS and is included with this FEIS:

Appendix G: Response to Comments on the DEIS

Portions of the following appendices from the DEIS were modified and are included with this FEIS as follows:

Appendix B: ROW Clearing Plan. This plan was condensed and updated information was added to better reflect proposed clearing activities .

Appendix C: Weed Management, Reclamation, and Revegetation Plan. This plan was condensed and clarified.

Appendix D: Best Management Practices (BMPs). Minor modifications were made to this appendix to consolidate or remove redundant BMPs.

Appendix E: Photo Simulations. Additional photo simulations were added to this appendix.

Appendix F: FEIS Distribution List. This appendix was updated from DEIS Distribution List to FEIS Distribution List and several names were added.

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SUMMARY

The Gallatin National Forest (GNF) is evaluating through this Environmental Impact Statement (EIS) whether or not to authorize a project proposed by NorthWestern Energy (NorthWestern) to rebuild an existing 69 kilovolt (kV) electric transmission line to a 161 kV electric transmission line on National Forest System (NFS) lands. The upgraded 161 kV transmission line would connect the existing Jack Rabbit Substation located near Four Corners, west of Bozeman, Montana, to a new substation near Big Sky Meadow Village in Big Sky, Montana. The area affected by the proposal is located in the Gallatin River Canyon between Four Corners and Big Sky. The Gallatin Canyon is an important gateway for tourists visiting Yellowstone National Park and Big Sky. The entire route is 37 miles, with 16 miles located on NFS lands. Proposed rebuild and upgrade of the transmission line on private lands are not part of the decision being considered in this FEIS. These 21 miles may be subject to Gallatin County permitting requirements (Four Corners Zoning District or Gallatin Canyon/Big Sky Zoning District).

This action is needed because rebuilding and upgrading the existing 69 kV facility would eliminate adequacy and reliability problems associated with the current electric transmission system. This Proposed Project would meet the anticipated future energy demands and provide for anticipated growth, which would better comply with industry standards and customer needs. This EIS has been prepared in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. This EIS discloses the direct, indirect, and cumulative environmental impacts that would result from the Proposed Action and alternatives. The Draft Environmental Impact Statement (DEIS) was circulated for comment in October 2012 for 45 days. Consideration was given to those comments received in the Final Environmental Impact Statement (FEIS). The document is organized into four chapters:

Chapter 1 – Purpose and Need for the Proposed Action

The purpose of the Proposed Action is to meet increasing load demands and electrical system reliability for the Gallatin Canyon and Big Sky, Montana area. Should the existing 69 kV transmission line from Ennis to Big Sky experience an outage, the limitations of the existing Jack Rabbit to Meadow Village 69 kV transmission line would allow service for only about half the current peak demand resulting in loss of service and extended outages to customers. As the Big Sky area continues to grow as is anticipated, this situation will worsen. This Proposed Project would meet the current energy demands and provide for future growth, which would better comply with industry standards and customer needs.

Chapter 2 – Alternatives Including the Proposed Action

The project proposal is to replace the existing 69 kV transmission line, which needs to be upgraded and replaced. Five alternatives were originally considered for the Proposed Project:

Generation and Non-Transmission Alternatives
Transmission Design Alternatives
Transmission System Alternatives
Proposed Action and Alternatives
No Action Alternative

The first three of these alternatives were considered, but eliminated from detailed analysis because they: would not meet the purpose and need for the Proposed Project; or were technologically infeasible. These alternatives are described in further detail in Chapter 2 of this

EIS and include: New Generation Alternatives (renewable, fossil fuel, and distributed); Design Alternatives (up-rate existing line from 69 kV to 161 kV, other voltage lines, double circuit options, upgrading to higher capacity 69 kV conductors, undergrounding or buried line); System Alternatives (new 161 kV line along Jack Creek, Other System Alternatives); Conservation and Demand Side-Management; and Routing Alternatives (localized route options).

A No Action Alternative and three action alternatives were analyzed in detail and are summarized below.

Alternative 1 - No Action

Under Alternative 1, the existing 69 kV transmission line between Jack Rabbit substation and Big Sky Meadow Village substation would not be rebuilt to a 161 kV transmission circuit and would remain as is. Ongoing maintenance would continue.

Alternative 2 - Proposed Action

The Proposed Action - Alternative 2 is to upgrade the existing 69 kV line to 161 kV between the Jack Rabbit Substation, west of Bozeman, and the Meadow Village substation at Big Sky to accommodate current requirements, anticipated future growth, and to improve reliability for existing customers. A distribution system would be built below the 161 kV transmission circuit (i.e., underbuilt). The distribution system would be upgraded from a three-wire system (currently in place) hung on post insulators (consisting of three insulators protruding from the transmission pole underneath the 69 kV conductor) to a four-wire system hung on cross-arm supports (supporting hardware perpendicular to the transmission pole underneath the 161 kV conductor). Construction of the project portion on NFS lands is forecasted to take approximately two years to complete. Construction would be scheduled to begin in 2013 with the system coming on line, energized at the 161 kV level, during the fall of 2014.

Alternative 3 – Cave Creek and Cascade East (Preferred Alternative)

Alternative 3 would utilize the same route alignment as the Proposed Action – Alternative 2, with the exception of two local routing options (LROs) described below. This alternative was developed to respond to various issues identified during the scoping process, specifically concern for visual impacts to the Lava Lake Trailhead, the Lava Lake wilderness access trail, the eligible wild and scenic river, and concerns identified in the Cascade Creek and Cave Creek recreation residence tracts. Alternative 3 would move the transmission line to the east side of United States Highway 191 (US Hwy 191) and the Gallatin River, across from the Cascade recreation residences. It would eliminate one transmission line and one distribution line crossing each of the Gallatin River and US Hwy 191.

Alternative 4 – Cave Creek and Cascade West

Alternative 4 would be the same route as Alternative 3 with the exception of the Cascade West LRO (described below). Like Alternative 3, this alternative was developed to respond to the same issues described in Alternative 3, but provides a different solution in the Cascade Creek Tract vicinity. It would move the transmission line to the west of the recreation residences at the Cascade and Cave Creek Tracts, and would eliminate two Gallatin River crossings and two US Hwy 191 crossings.

Mitigation and Monitoring

A specific Construction and Operation Plan (COP) that would address mitigation and design requirements outlined in this document would be prepared in consultation with the US Forest Service (USFS or Forest Service) prior to construction being authorized. The COP would outline any required monitoring guidelines for the construction, operation, and maintenance of the line in order to avoid inadvertent impacts to resources. The Forest Service would appoint an authorized inspector to oversee construction activities, authorize revisions or changes in the field, and determine if environmental protection is being accomplished according to the approved COP.

Two site-specific Forest Plan Amendments would be required to approve Alternatives 3 and 4. First, the decision to authorize a utility corridor is automatically coupled with the decision to designate that corridor as Management Area (MA) 25 (electrical transmission lines and pipelines, climatic and snow measuring sites, and electric sites). The existing corridor is MA 25 and any new right-of-way (ROW), either transmission line or distribution line, would also become a MA 25 designation (refer to Chapters 2 and 4 for a complete discussion of this required Forest Plan Amendment).

Second, a Forest Plan Amendment for wild and scenic rivers would be required if either Alternative 3 or Alternative 4 is selected in the Record of Decision in order to meet the Wild and Scenic River direction in the Forest Plan standards (pg. II-29). The direction states that new facilities should be restricted to existing ROWs, where no reasonable alternatives exist. Additional information on the amendment is described in the Wild and Scenic Rivers discussion in the following "Chapter 3" description.

Chapter 3 – Affected Environment and Environmental Consequences

Chapter 3 discusses the environmental effects that would occur with implementation of the alternatives described in Chapter 2, and forms the scientific and analytical basis for comparing the environmental effects of each alternative. The impacts discussed in this chapter are for those issues considered to be factors in formulating the decisions. Issues were categorized as Key Issues, or issues that drove an alternative, and Analysis Issues or issues that were not considered to be key factors in making a decision, did not drive an alternative, or could be effectively mitigated and dismissed. Please see Table 2-2 in Chapter 2 for a more complete comparison of alternatives by Key Issue and Analysis Issue.

Based upon the effects of the alternatives, the GNF will decide whether to authorize the construction, operation and maintenance activities along and within the existing ROW for the portion of the transmission line that is on NFS land, approximately 16 miles of the proposed 37-mile route.

Key Issues and Major Conclusions

The key issues identified during scoping included scenery impacts, historic and archaeological resources, transportation and traffic, and access to NFS lands. Several other issues (Analysis Issues) were analyzed but did not drive alternatives development.

Issue #1 – Scenery

The viewshed of the Gallatin Canyon consists of high quality scenery that is highly valued by both local residents and visitors to the area. The existing transmission line has altered scenery in the canyon with the presence of transmission structures and wires, and vegetation clearing within the existing ROW. The issue is that rebuilding the transmission line, which would include installing taller, larger diameter transmission structures, larger hardware, larger diameter conductors, and additional ROW clearing could affect the scenic values of the area. Some specific segments of the transmission line or specific transmission structure locations may be highly visible to people passing through the area or using it for recreational purposes. Residents of the Cave Creek and Cascade recreation residence tracts, which are located adjacent to the existing transmission line ROW, expressed concern for visual impacts. Project related activities combined with planned highway improvements by the Montana Department of Transportation (MDT) may contribute to cumulative effects regarding scenic values.

The analysis indicated that the No Action alternative would have no additional effect. The existing visual contrast would increase and the existing visual condition (EVC) would decrease with Alternatives 2, 3, and 4. All alternatives would be consistent with the Forest Plan Standards for visual quality. To meet the MA 25 Forest Plan Standard for visual quality, the Visual Quality Objectives (VQOs) of the adjacent management areas would be considered with Alternatives 2, 3 and 4. Each action alternative would have potential permanent adverse effects on scenery due to impacts to the EVC of the Canyon viewed by recreation residents and the public. Alternatives 3 and 4 remove the transmission line from the center of the Cave Creek and Cascade Creek Tracts and improve the EVC for recreation residents. Distribution lines would remain. Alternative 3 would make the greatest overall net improvement to the EVC of the US Hwy 191 and Gallatin River corridor, the Lava Lake Trailhead area, and the Cascade Creek recreation residence tract. Overall, Alternative 3 would have the least impacts to the scenery resource of the action alternatives.

Issue #2 – Historic and Archaeological Resources

The ROW for the Proposed Project crosses several historic sites, including numerous pastures and creek crossings. Ground disturbance, access roads, transmission structure placement and construction have the potential to affect these areas. The following issues related to historic and archaeological sites were identified for the Proposed Project:

There are known historic and archaeological sites in the analysis area that could potentially be impacted by the Proposed Project.

There have been limited cultural resource surveys performed in the analysis area in the past; undiscovered historic and archaeological sites may exist in unsurveyed areas.

The GNF has identified unsurveyed locations within the Jack Rabbit to Big Sky Meadow Village Proposed Project Area that are likely to contain archaeological sites. A focused cultural resource survey of these sites was completed in the fall of 2009. A complete cultural survey of the entire permitted route and defined area of potential effects (APE) would be completed prior to construction. A historical architecture inventory of the recreation residences was completed in the fall of 2011. All cultural resource survey results are discussed in Chapter 3 of this FEIS.

The analysis indicated that most of the known historic and archaeological sites in the Proposed Project Area have not been evaluated for their eligibility to the National Register of Historic

Places (National Register). An evaluation of 69 recreation residences and the 11 recreation residence tracts was conducted for their eligibility to the National Register. Only two of the 69 residences have been determined by the GNF to be individually eligible for the National Register. These two properties, Swan Creek #7 (Figure 3.3.2-6) and Wilma Creek #1 (Figure 3.3.2-9), would not be impacted by any of the alternatives. Alternative 2 would have no impact on Wilma Creek #1 as a historic site. None of the 11 tracts qualify as National Register-eligible districts. Less than nine percent of the analysis area has been surveyed for historic and archaeological sites. For this reason, it is likely that undiscovered sites remain to be identified and evaluated. There would be no impacts to resources eligible or in the case of archaeological sites, considered to be eligible for analysis purposes, with any of the alternatives (1-4).

Issue #3 – Transportation, Traffic, and Access to National Forest Service Lands

The issue for transportation is that during the construction period of the project, activities would occur along the narrow US Hwy 191 travel corridor, as well as at GNF access points, and would have the potential to increase traffic, cause traffic delays, and interfere with GNF access for recreationalists and recreational residences. Traveler safety concerns during construction would be addressed with Best Management Practices (BMPs), project design features (PDFs), and the Transportation Management Plan (TMP). It would be expected that the operation and maintenance activities associated with the proposed transmission line upgrades would have minimal additional effects on travel or transportation along US Hwy 191.

Access concerns raised by local residents focused on the construction period and process, vegetation clearing, and that their access to the recreation residences might be restricted or modified. Further, they expressed concern that damage might be done to the recreation residences or the tract area, or that they might be displaced due to change or lack of access.

The analysis indicated that with Alternatives 2, 3, and 4, temporary travel delays (15 minutes or more), detours and lane closures during construction would occur to the Cave Creek, Welchom Springs, Cascade Creek, Greek Creek, and Tamphrey Creek recreation residence tracts. No permanent closures of the access roads to these tracts would occur with Alternatives 1, 2, 3, and 4. As there is no construction associated with Alternative 1, there would be no construction-related traffic impacts. No adverse impacts to transportation, traffic and access would occur with any of the alternatives from operations and maintenance activities.

Analysis Issues and Major Conclusions

Analysis issues are those issues that did not drive alternative development, but have the potential to be impacted by the Proposed Project alternatives. These issues were raised by the public, agencies or Forest Service specialists. These issues include:

Issue #4 – Recreation

The issue with recreation is that during construction activities, as well as the long-term operation and maintenance of the transmission line associated with the Proposed Project and its alternatives, would affect recreationists, recreation resources, and businesses that rely on the recreation resources within the Gallatin Canyon. Recreation facilities located in the GNF include developed campgrounds, boat and raft launches, developed trailheads, hiking trails, and wilderness access. The Gallatin Canyon area is also an important gateway for tourists visiting Big Sky and Yellowstone National Park. The Gallatin National Forest Management Plan of 1987 (Forest Plan)

manages recreational activities with standards applied at two levels: Forest-wide and Management Areas. Construction and operational activities such as ROW clearing, ground disturbance, and new structures would have a potential to alter the recreational values of these same areas within the GNF.

The analysis indicated that Alternatives 2, 3, and 4 would all require temporary closures of the Moose Creek Group Site when not in use or reserved by campers. Alternative 4 is the only alternative that would require permanent ROW from an existing recreational facility, Lava Lake Trail. During the construction period of Alternatives 2, 3, and 4, there would be an increase in construction traffic and noise near campgrounds, trailheads, and boat ramps, as well as disrupting dispersed recreational activities.

Issue #5 – Wild and Scenic Rivers

There is concern that the Proposed Project may impact the "outstandingly remarkable values" (ORV) associated with the Gallatin River, a river the Forest Plan determined to meet the eligibility criteria for potential classification as a Recreational River under the Wild and Scenic Rivers Act. Potential impacts may result from taller and larger diameter transmission structures, larger conductors, and additional ROW clearing that could be visible in the immediate foreground from the river corridor.

The analysis indicated that the No Action Alternative (Alternative 1) would have no additional effect on the wild and scenic ORV of the Gallatin River, in the short-term or long-term. Alternatives 2, 3, and 4 would have potential impacts, in the short-term, to the recreation and scenery ORVs, due to temporary closures of river access and recreational opportunities during certain phases of construction. Construction activities would also temporarily deter visitors from enjoying the River's scenic qualities and would create an impact to the scenery ORV. There is no anticipated impact to the fisheries ORV during construction or operation of the Proposed Project with any of the action alternatives.

A Forest Plan Amendment for wild and scenic rivers would be required if either Alternative 3 or Alternative 4 is selected in the Record of Decision in order to meet the Wild and Scenic River direction in the Forest Plan standards (pg. II-29). The direction states that new facilities should be restricted to existing ROWs, where no reasonable alternatives exist. The mere fact that the LROs routing options of Alternatives 3 and 4 exist as alternatives to the proposed action demonstrates that there is another reasonable alternative, i.e. leaving the ROW in its current location. However, the standard also says that "the scenic, recreational, and fish and wildlife values must be evaluated in the selection of the site." In the case of this alternative, these two somewhat ambiguous mandates may be in conflict and in order to select a site with consideration of the outstandingly remarkable values of the Gallatin River, the ROW location may need to change, thus prompting a site specific amendment to allow this (refer to Chapters 2 and 4, and the Wild and Scenic River section of Chapter 3 for additional discussion of this Forest Plan Amendment).

Issue #6 – Inventoried Roadless Areas

During scoping, the issue was raised that transmission line improvements would diminish the character of Inventoried Roadless Areas (IRAs). Within the GNF, the current 69 kV transmission line ROW and the proposed alternative ROWs are identified as passing through four segments of the Madison IRA. In addition, the Gallatin Fringe IRA is within approximately 0.25 mile of the Proposed Project, and there are a few areas of unroaded lands that lay between the existing transmission line and the Madison IRA.

The analysis indicated that the Gallatin Fringe IRA is not affected by Alternatives 1, 2, 3, or 4. Alternative 2 - Proposed Action and Alternatives 3 and 4, impact the Madison IRA more than Alternative 1. However, these impacts do not significantly further diminish the roadless character of the Madison IRA as the existing US Hwy 191 and Montana State Highway 64 (MT Hwy 64) and other human developments within or adjacent to this IRA have already diminished the roadless character of the area. Most of this human development existed prior to the boundary of the Madison IRA being established.

Issue #7 – Water Resources

This resource category has issues related to three specific sub-categories:

Water Quality – Sediment from construction activities is a principle concern for water quality. There is a concern that construction, operation, and maintenance for the Proposed Project could negatively affect water quality within the Proposed Project Area resulting in increased turbidity and channel sedimentation. There is also a concern that impacts to water quality could result from accidental spills and leaks of petroleum, oil, and lubricants from equipment and vehicles used during construction of the transmission line.

Under the No Action Alternative - Alternative 1, the project would not be constructed and no water quality impacts would occur. Water quality would be unchanged from existing conditions. There would be similarly negligible water quality impacts for Alternatives 2, 3, and 4. Impacts to water quality would be short term and negligible due to the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) which includes procedures for implementing and monitoring BMPs to minimize or prevent "significant sediment" from leaving the construction site. There would be no further impairment of the four identified impaired waters (Hell Roaring Creek, Storm Castle Creek, West Fork Gallatin River, and South Fork West Fork Gallatin River).

Wetlands – Bottomlands associated with the Gallatin River, creeks, small ponds and seeps present a patchwork of wetlands in the Proposed Project Area that could be impacted by Project related activities. Locating proposed structures and/or access roads in or next to wetlands may have a negative impact on wetland values which include riparian habitat for fish and wildlife, habitat connectivity, pollutant removal, sediment transport and storage, water temperature control, riverbank stability, flood water retention, groundwater recharge and energy and nutrient cycling. Locating proposed structures and/or access roads in or next to wetlands may result in discharge of dredged or fill material into Waters of the United States.

The analysis indicated that no wetland impacts would occur with the No Action Alternative. Wetlands would be unchanged from existing conditions. Wetland impacts would be minor for all of the alternatives due to the ability to span wetlands, direct embed transmission structures in or near wetlands, and use of wetland matting as needed to access transmission structure locations. The impact to wetlands from access roads and overland travel would be the same for all alternatives, which would be minor to negligible. There would be no impact to wetlands from staging areas, fly yards, or deck areas.

Floodplains – Locating proposed structures and/or access roads in or next to floodplains may have a negative impact on floodplain functions which include decreasing run-off velocity, reducing flood peaks, and distributing storm flows over longer time periods, causing tributary and main channels to peak at different times. Floodplain habitats associated with riparian and wetland systems may also be negatively impacted.

The impacts to floodplains would be negligible for all of the alternatives due to the ability to span floodplains and because the presence of transmission structures in the floodplain would not change flooding patterns or flood flows, the base flood elevation will not increase, and floodplain functions will remain intact.

Issue #8 – Soils

The issue with soils is that the Proposed Project could potentially cause excess soil disturbance that results in long term impairment of land productivity and reduced soil quality along portions of the transmission line corridor. Of specific concern is the extent and severity of soil disturbance and whether that disturbance has the potential to cause increased soil erosion and/or increased weed infestations. Upgrades to access roads, the installation of the upgraded power transmission lines and transmission structures, and the removal of timber along the transmission line ROW are activities in this proposal that have the greatest potential to create soil disturbance.

Based on the effects analysis, there would be minimal differences in soil disturbance caused by Alternatives 2, 3, and 4. Each of these Action Alternatives would cause the same level of permanent soil disturbance (0.34 acre), with only slight variations in the amount of temporary disturbance caused. The Proposed Action - Alternative 2 would have the fewest acres of timber cleared (14.8 acres), while Alternative 4 would have the most acres of timber cleared (22.5 acres), closely followed by Alternative 3 (22.4 acres). If no action were taken (Alternative 1), there would be no increase in impacts to soil resources. Alternative 1 would have the lowest impact to soil quality.

Issue #9 – Noxious Weeds

Regarding noxious weeds, ground disturbance, widening existing access roads, and increased vehicle activity associated with the Proposed Project are construction activities which could cause new weed populations to become established and existing populations to expand. In addition, the ROW corridor and access road widening would create more open, unforested habitat that is suitable for weeds, especially with its proximity to US Hwy 191, which is known to be a major transport vector for weeds.

The analysis indicated that the No Action Alternative - Alternative 1 would negligibly affect weeds in the Proposed Project Area, and these effects would be from ROW operations and maintenance activities except that NorthWestern would now be required to treat weeds along the corridor. The new permanent disturbance for the three action alternatives (Alternatives 1, 2, and 3) would increase the susceptibility of the Proposed Project Area to weed invasion and spread by opening up the canopy, increasing soil disturbance, and creating weed seed transport vectors. Of the three action alternatives, Alternative 2 - Proposed Action would disturb the least amount of habitat and require the least amount of tree clearing, thus presenting the lowest overall risk to weed establishment and spread.

Issue #10 – Forested Vegetation and Fire/Fuels

The issue with forest vegetation is that tree removal associated with ROW clearing for the Proposed Project has the potential to reduce the amount of forested old growth, increase the amount of insect activity to unacceptable levels, increase tree injury, increase down woody debris, and, in the short-term, increase fire risk fuel loading. Construction, operation, and maintenance under the action alternatives would have a low likelihood of affecting forested vegetation and fire/fuels.

Issue #11 – Sensitive Plants

Sensitive plants were identified as an issue during interdisciplinary team scoping discussions, initial public scoping, and the Notice of Intent (NOI) comment period. All Forest Service planned, funded, executed, or permitted programs and activities require review for possible effects on sensitive species.

The analysis indicated that suitable habitat for Forest Sensitive plant species is limited or absent in all alternatives. Under the Proposed Action (Alternative 2), suitable habitat for sensitive plants would have negligible to minor impacts and be avoided through spanning or micrositing. Some dry grassland/meadow and sagebrush shrubland habitat would be affected, but most direct impacts would be from temporary disturbance or tower structure locations, as these habitats are easily spanned.

The loss of habitats would be expected to be negligible due the linear nature of these disturbances and its small proportion relative to surrounding habitats. Overall, the Proposed Action and alternatives would not contribute toward a trend toward federal listing or loss of viability to sensitive plant populations or species. Construction, operation, and maintenance under the Action Alternatives would have a low likelihood of affecting wetlands or riparian habitat.

Issue #12 – Wildlife

Transmission line construction, operation, and maintenance activities could impact wildlife species and their habitat as described below.

Threatened, Endangered, and Proposed Threatened Species (TES) found within the Proposed Project Area include the Canada Lynx, Grizzly Bear, and the Wolverine, forest carnivore species that range widely throughout the region.

The American Marten, Elk, Northern Goshawk, Bald Eagle, Grizzly Bear, and Wild Trout are all Management Indicator Species (MIS) for the GNF, and are considered indicators of forest health.

Sensitive Species for the GNF that may be found in the Proposed Project Area include gray wolf, bighorn sheep, harlequin duck, peregrine falcon, and their habitat could be affected by construction and operation of the transmission line, and temporary and permanent access roads. Impacts may include habitat loss; noise disturbance associated with human presence and construction equipment; and increased mortality.

The migratory birds species of concern that occur in Gallatin County and possibly the Proposed Project Area, include the: Black Rosy-Finch, Bobolink, Brewer's Sparrow, Brown Creeper, Burrowing Owl, Cassin's Finch, Clark's Nutcracker, Flammulated Owl, Grasshopper Sparrow, Gray-crowned Rosy-Finch, Great Blue Heron, Great Gray Owl, Horned Grebe, Lewis's Woodpecker, Pacific Wren, Sage Sparrow, Loggerhead Shrike and Golden Eagle (MTNHP 2011 and 2012).

Wild trout are fishery MIS species that may occur in the Proposed Project Area.

Western toad is the only sensitive amphibian or reptile that may occur in the Proposed Project Area.

Issue #13 – Human, Health and Safety, and other Considerations

This resource category has issues related to three specific sub-categories:

Electric and Magnetic Fields – There is general public interest about whether electric and magnetic field exposure from transmission lines may affect public health. This low to mid-voltage transmission line is designed for safe operation and to minimize risks.

Based on the analysis there would be minimal differences in electric field levels among Alternatives 1, 2, 3, and 4 in terms of impacts on recreation residences and trails. All alternatives result in electric and magnetic fields that are less than the Montana Major Facility Siting Act (MFSA) requirement of 1 kV per meter (kV/m) from the edge of the ROW and 7kV/m for road crossings.

Noise – There is concern about the noise from construction activities associated with the Proposed Project. Increasing the voltage of the line has the potential to increase low levels of broad band noise (crackle and hiss) associated with line corona. Noise associated with the transmission line was raised by the public as a concern. Construction noise would move and be localized on a day-to-day basis as the transmission line segments are constructed throughout the Proposed Project Area.

Based on the analysis, there would be minimal differences in operational noise levels among Alternatives 1, 2, 3, and 4 in terms of impacts on recreation residences and trails. All alternatives result in noise levels that are less than the Montana MFSA noise level guideline for electrical transmission facilities (50 A-weighted decibels [dB(A]) average day/night noise level (L_{DN}) at the edge of the ROW in residential and subdivided areas). Construction noise will be limited to day time periods and to staging areas that are not close to sensitive receptors.

Property Values - There was concern expressed by recreation residence owners as to the potential effects of the Proposed Project to property values of these residences. The existing ROW across recreation residence lots on NFS lands would be used and slightly expanded for the Proposed Project.

The analysis indicated that most studies related to transmission line impacts on property values have concluded that other factors, such as general location, size of property, improvements, condition, amenities, and supply and demand factors in a specific market area are far more important criteria than the presence or absence of transmission lines in determining the value of real estate. Some impacts on property values (and salability) might occur on an individual basis as a result of the upgrade of the transmission line. However, these impacts would be highly variable, individualized, and unpredictable. Additionally, any effect of the transmission line on property values would be realized only when the property was sold.

Chapter 4 – Consultation and Coordination

Federal agencies preparing an FEIS must “make diligent efforts to involve the public in preparing and implementing their NEPA procedures” (40 Code of Federal Regulations [CFR] 1506.6(a)). Council on Environmental Quality (CEQ) regulations provide guidance on the scoping process, including inviting participation of affected federal, state, and local agencies, Native American Tribes, as well as any other interested parties (40 CFR 1501.7(a)(1)). Chapter 4 lists the agencies contacted.

On March 6, 2009, letters were sent to landowners, agencies, and potentially interested parties retained on a Forest Service mailing list developed by the Forest Service. The notification packet included the letter, project summary, a map showing the preliminary route under consideration, continued interest confirmation form, and before and after (simulation) photographs. Initial scoping for the Proposed Project was completed during the April 2009 by the Forest Service, and based on the comments received and an internal review; the Forest Service interdisciplinary team recommended the completion of an EIS for the Proposed Project.

To comply with NEPA 40 CFR 1508.22, the Forest Service published an NOI to prepare an EIS for the Jack Rabbit to Big Sky Project in the Federal Register (Volume 75, Number 109) on June 8, 2010. The NOI initiated the public scoping period for the Project and requested all comments be received by July 8, 2010. Comments were received from federal and state agencies, the Big Sky Community Corporation (a non-profit private organization), and private citizens. Government-to-government Tribal consultation with the Confederated Salish and Kootenai Tribal Historic Preservation Office (THPO), Eastern Shoshone Tribe THPO, Crow Tribal Council, Crow Cultural Committee, Nez Perce Tribe, Shoshone-Bannock Business Council, and Wind River Shoshone Cultural Committee was initiated by the Forest Service to identify issues of concern to Native Americans regarding the Proposed Project. Comments were provided by email, letter, and written correspondence to the Forest Service.

The DEIS was distributed October 2012 for a 45-day comment period to individuals and organizations that requested a copy of the document and those that submitted scoping comments during the NOI comment period. In addition, copies were sent to the listed Federal agencies and interested tribes, state and local governments, and organizations. The FEIS will be sent to commenters, federal, state and local agencies, interested Tribes and anyone that requests a copy.

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APPENDICES

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ACRONYMS AND ABBREVIATIONS

AC	alternating current
ACHP	Advisory Council on Historic Preservation
ACSR	aluminum conductor steel reinforced
AIRFA	American Indian Religious Freedom Act of 1978
ALL	all management activities and practices
APE	Area of Potential Effects
APLIC	Avian Power Line Interaction Committee
ARM	Administrative Rules of Montana
ARPA	Archaeological Resources Protection Act of 1979
BA	Biological Assessment
BA/ac	Basal area per acre
BACT	Best Available Control Technology
BCC	Bird of Conservation Concern
BFE	base flood elevation
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practices
BMU	Bear Management Unit
BPA	Bonneville Power Administration
CAA	Clean Air Act
CCC	Civilian Conservation Corps
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
COP	Construction and Operation Plan
CWA	Clean Water Act
DC	direct current
dB	decibels
dB(A)	A-weighted decibels
DBH	diameter at breast height
DEIS	Draft Environmental Impact Statement
DEQ	Department of Environmental Quality
DNRC	Department of Natural Resources and Conservation
DOE	Department of Energy
DPS	Distinct Population Segment
DSD	detrimental soil disturbance
E.O.	Executive Order
EIS	Environmental Impact Statement
EJ	Environmental Justice
EMF	Electric and Magnetic Fields
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
EPRI	Electric Power Research Institute
ESA	Endangered Species Act
EVC	existing visual condition
°F	degrees Fahrenheit
FAA	Federal Aviation Administration
feet^2/acre	feet squared per acre (basal area)
FEIS	Final Environmental Impact Statement

FEMA	Federal Emergency Management Agency
FERC	Federal Electric Reliability Council
FHWA	Federal Highway Administration
FLPMA	Federal Land Policy and Management Act of 1976
Forest Plan	Gallatin National Forest Management Plan of 1987
Forest Service	United States Forest Service (also USFS)
FSH	Forest Service Handbook
FSM	Forest Service Manual
G	Gauss
GIL	Gas Insulated Transmission Line
GIS	geographic information system
GNF	Gallatin National Forest
GPS	global positioning system
gr	gravelly
GYBEMP	Greater Yellowstone Bald Eagle Management Plan
HPFF	High Pressure Fluid Filled
HU	human use
HUC	Hydraulic Unit Code
Hz	Hertz (cycles per second)
I-90	United States Interstate 90
ID	interdisciplinary
IRA	inventoried roadless areas
JRBS	Jack Rabbit to Big Sky Meadow Village 161 kV Transmission Line Upgrade Project
KOP	key observation point
km	kilometers
km^2	square kilometers
kV	kilovolt
kV/m	kilovolt per meter
L_{50}	sound level exceeded 50 percent of the time
LAU	Lynx Analysis Units
LCAS	Lynx Conservation Assessment and Strategy
L_{DN}	average day/night noise level
L_{eq}	equivalent noise level
$L_{eq}(h)$	equivalent noise level during a one-hour period
LiDAR	Light Detection and Ranging
LMP	Land Management Plan
LRO	local routing options
LWCF	Land and Water Conservation Fund
MA	Management Area
MAI	Member Appraisal Institute
MAP	mean annual precipitation
MBEWG	Montana Bald Eagle Working Group
MBTA	Migratory Bird Treaty Act
MCA	Montana Code Annotated
MCNWA	Montana County Noxious Weed Management Act
MDT	Montana Department of Transportation
MFG	Montana Field Guide
MFWP	Montana Fish, Wildlife and Parks
MFSA	Montana Major Facilities Siting Act
mG	milliGauss
MHS	Montana Historical Society

MIS	Management Indicator Species
mm	millimeter
MNWSAC	Montana Noxious Weed Summit Advisory Council
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPDES	Montana Pollutant Discharge Elimination System
mph	mile per hour
MRHR	Montana Register of Historic Resources
MT Hwy 64	Montana State Highway 64
MTNHP	Montana Natural Heritage Program
MW	megawatts
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act of 1990
NAIP	National Agriculture Imagery Program
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NERC	National Electric Reliability Council
NESC	National Electrical Safety Code
NFMA	National Forest Management Act
NFS	National Forest System
NHPA	National Historic Preservation Act
NIEHS	National Institute of Environmental Health Sciences
NOA	notice of availability
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NorthWestern	NorthWestern Energy
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRLMD	Northern Rockies Lynx Management Direction
NRCS	Natural Resources Conservational Service
NWI	National Wetland Inventory
OHV	off-highway vehicle
OPGW	optical power ground wire
ORV	outstandingly remarkable values
OSHA	Occupational Safety and Health Administration
PA	Programmatic Agreement
PCA	Primary Conservation Area
PCE	primary constituent element
PDF	Project Design Features
PI	point of intersection
Proposed Project	Jack Rabbit to Big Sky Meadow Village 161 kV Transmission Line Upgrade Project
POWER	POWER Engineers, Inc.
PSC	Public Service Commission
R1	Region 1
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
ROW	right-of-way
RPA	Forest and Rangeland Renewable Resources Planning Act
SCFF	Self Contained Fluid Filled
SD	standard deviation

SHPO	State Historic Preservation Officers
SIO	Scenic Integrity Objectives
SIP	state implementation plan
SMP	Smoke Management Plan
SMZ	Streamside Management Zone
SOC	Species of Concern
SPCC	Spill Prevention Control and Countermeasures
SUP	Special Use Permit
SWPPP	Stormwater Pollution Prevention Plan
T/ac	tons/acre
TCP	traditional cultural properties
TES	Threatened and Endangered Species
THPO	Tribal Historic Preservation Office
TMDL	Total Maximum Daily Load
TMP	Transportation Management Plan
TOC	Transportation Operations Component
TSMRS	Timber Stand Management Recording System
US Hwy 191	United States Highway 191
U.S.C.	United States Code
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USFS	United States Forest Service (also Forest Service)
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VMS	Visual Management System
VQO	Visual Quality Objective
WECC	Western Electricity Coordinating Council
WSA	Wilderness Study Area
XLPE	Cross-linked Polyethylene